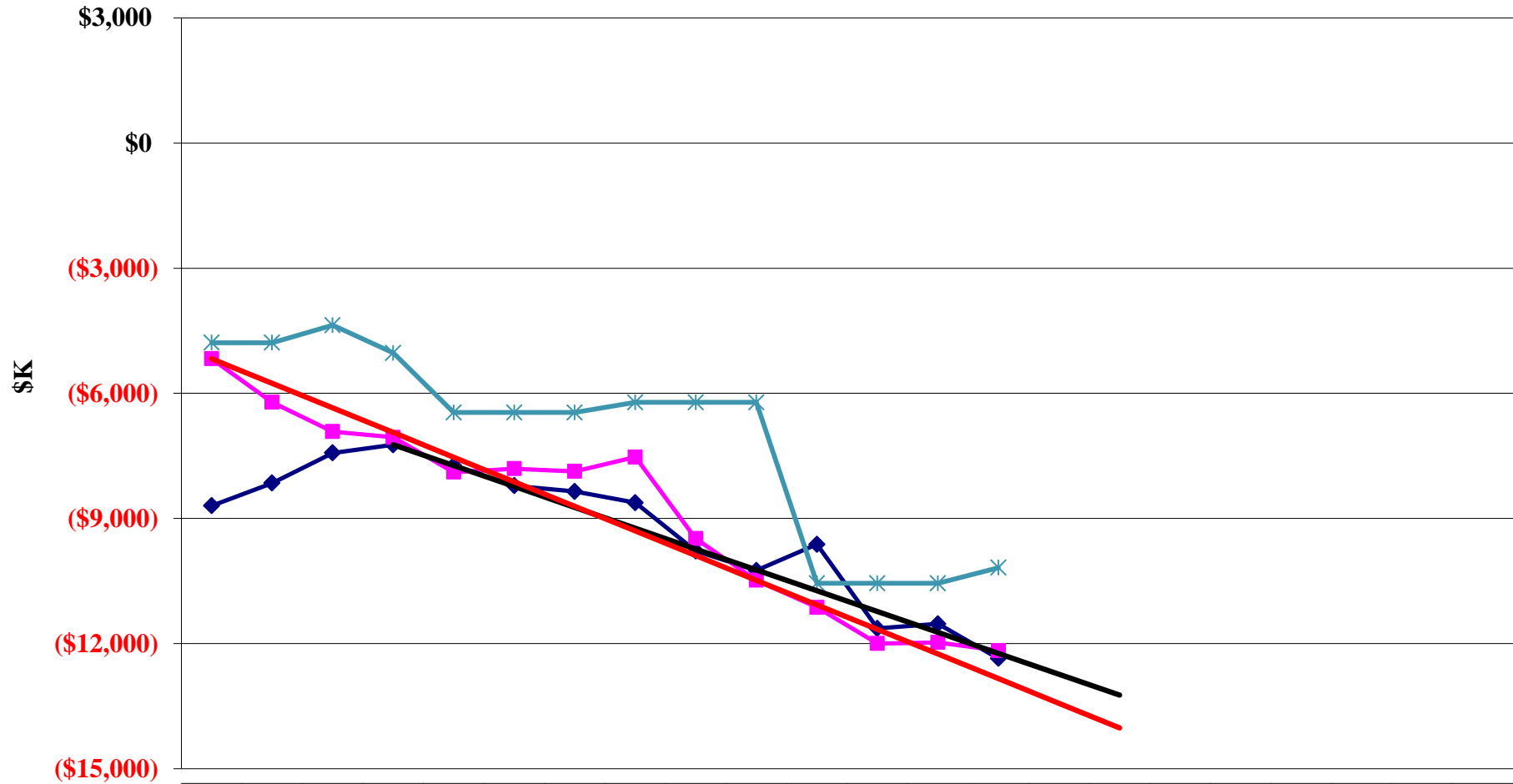


12 GeV Upgrade NP Project

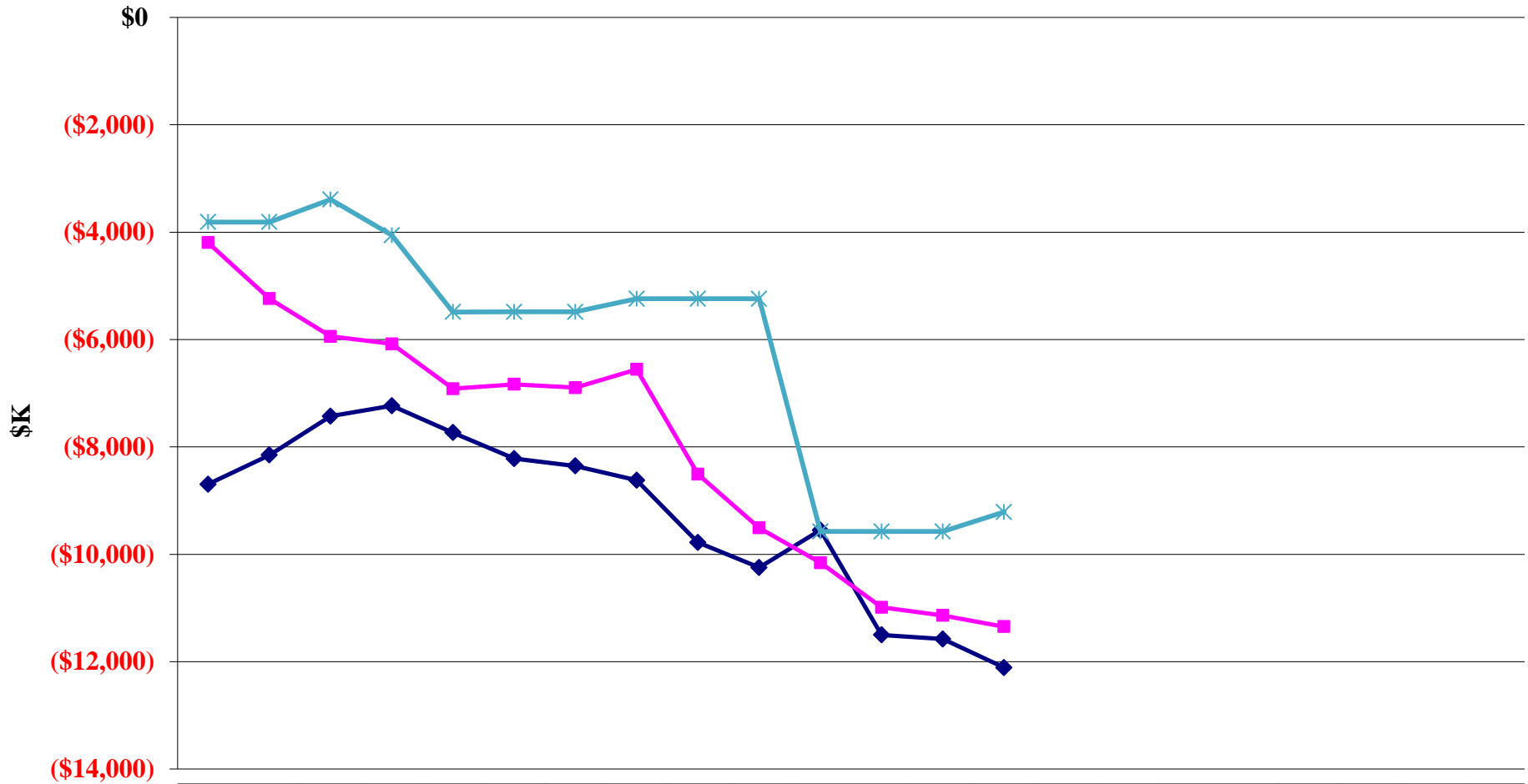
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(8,694)	(8,152)	(7,429)	(7,234)	(7,734)	(8,218)	(8,355)	(8,621)	(9,780)	(10,247)	(9,622)	(11,637)	(11,528)	(12,356)									
■ Cv	(5,170)	(6,213)	(6,917)	(7,054)	(7,890)	(7,808)	(7,871)	(7,530)	(9,482)	(10,481)	(11,130)	(11,998)	(11,973)	(12,167)									
* VAC	(4,786)	(4,785)	(4,367)	(5,034)	(6,460)	(6,460)	(6,460)	(6,217)	(6,217)	(6,217)	(10,555)	(10,555)	(10,554)	(10,180)									
— Trendline Sv				(7,234)	(7,734)	(8,234)	(8,734)	(9,234)	(9,734)	(10,234)	(10,734)	(11,234)	(11,734)	(12,234)	(12,734)	(13,234)							
— Trendline Cv	(5,170)	(5,760)	(6,350)	(6,940)	(7,530)	(8,120)	(8,710)	(9,300)	(9,890)	(10,480)	(11,070)	(11,660)	(12,250)	(12,840)	(13,430)	(14,020)							

12 GeV Upgrade NP Construction

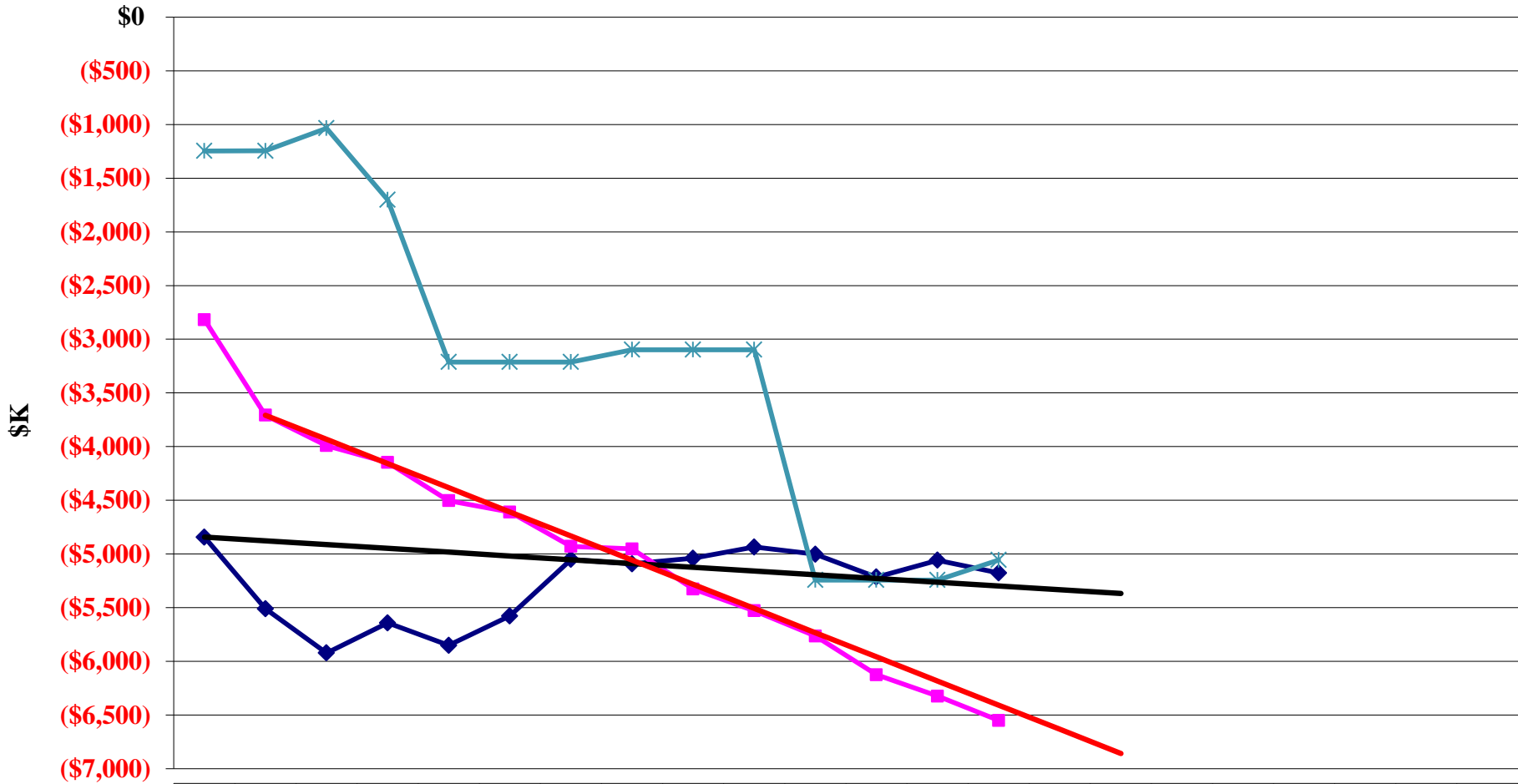
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(8,694)	(8,152)	(7,429)	(7,234)	(7,734)	(8,218)	(8,355)	(8,621)	(9,780)	(10,247)	(9,552)	(11,501)	(11,579)	(12,111)									
■ Cv	(4,196)	(5,238)	(5,943)	(6,080)	(6,916)	(6,834)	(6,897)	(6,555)	(8,508)	(9,507)	(10,157)	(10,988)	(11,140)	(11,348)									
* VAC	(3,811)	(3,811)	(3,393)	(4,059)	(5,486)	(5,485)	(5,485)	(5,242)	(5,242)	(5,242)	(9,575)	(9,575)	(9,575)	(9,213)									

12 GeV 1.3 Construction Accelerator Systems

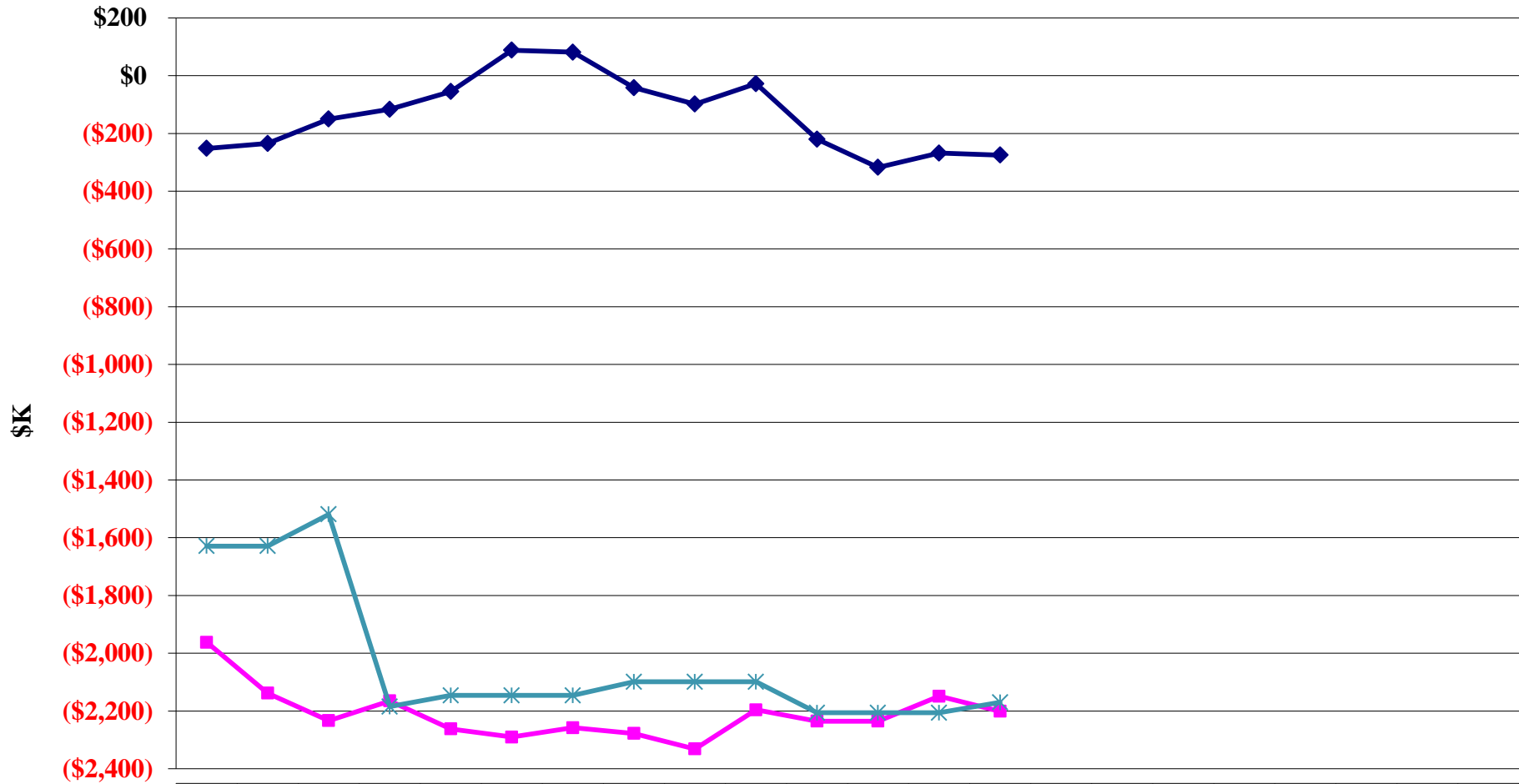
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(4,843)	(5,510)	(5,922)	(5,643)	(5,852)	(5,577)	(5,052)	(5,093)	(5,040)	(4,936)	(5,003)	(5,215)	(5,058)	(5,177)									
■ Cv	(2,817)	(3,708)	(3,990)	(4,148)	(4,504)	(4,610)	(4,929)	(4,953)	(5,326)	(5,529)	(5,764)	(6,125)	(6,324)	(6,550)									
✱ VAC	(1,246)	(1,245)	(1,035)	(1,702)	(3,212)	(3,213)	(3,213)	(3,098)	(3,098)	(3,098)	(5,242)	(5,242)	(5,242)	(5,056)									
— Trendline Sv	(4,843)	(4,878)	(4,913)	(4,948)	(4,983)	(5,018)	(5,053)	(5,088)	(5,123)	(5,158)	(5,193)	(5,228)	(5,263)	(5,298)	(5,333)	(5,368)							
— Trendline Cv		(3,708)	(3,933)	(4,158)	(4,383)	(4,608)	(4,833)	(5,058)	(5,283)	(5,508)	(5,733)	(5,958)	(6,183)	(6,408)	(6,633)	(6,858)							

12 GeV 1.3.1 Construction Cryomodules

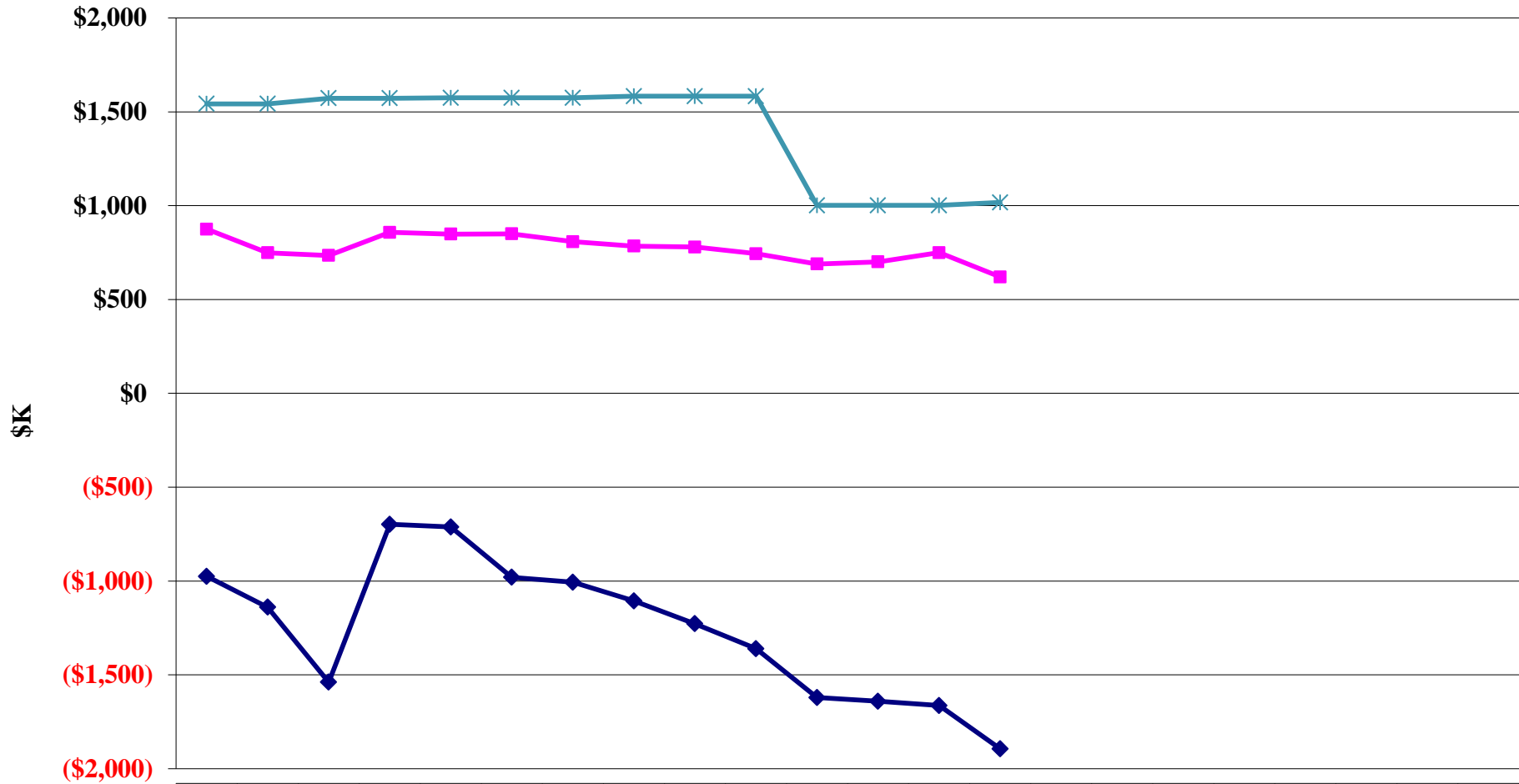
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13		
◆ Sv	(252)	(235)	(150)	(116)	(55)	88	82	(42)	(98)	(27)	(220)	(318)	(268)	(275)										
■ Cv	(1,962)	(2,138)	(2,234)	(2,165)	(2,262)	(2,290)	(2,258)	(2,278)	(2,331)	(2,196)	(2,235)	(2,235)	(2,149)	(2,201)										
* VAC	(1,629)	(1,629)	(1,519)	(2,185)	(2,146)	(2,146)	(2,146)	(2,099)	(2,099)	(2,099)	(2,206)	(2,206)	(2,206)	(2,170)										

12 GeV 1.3.2 Construction Power

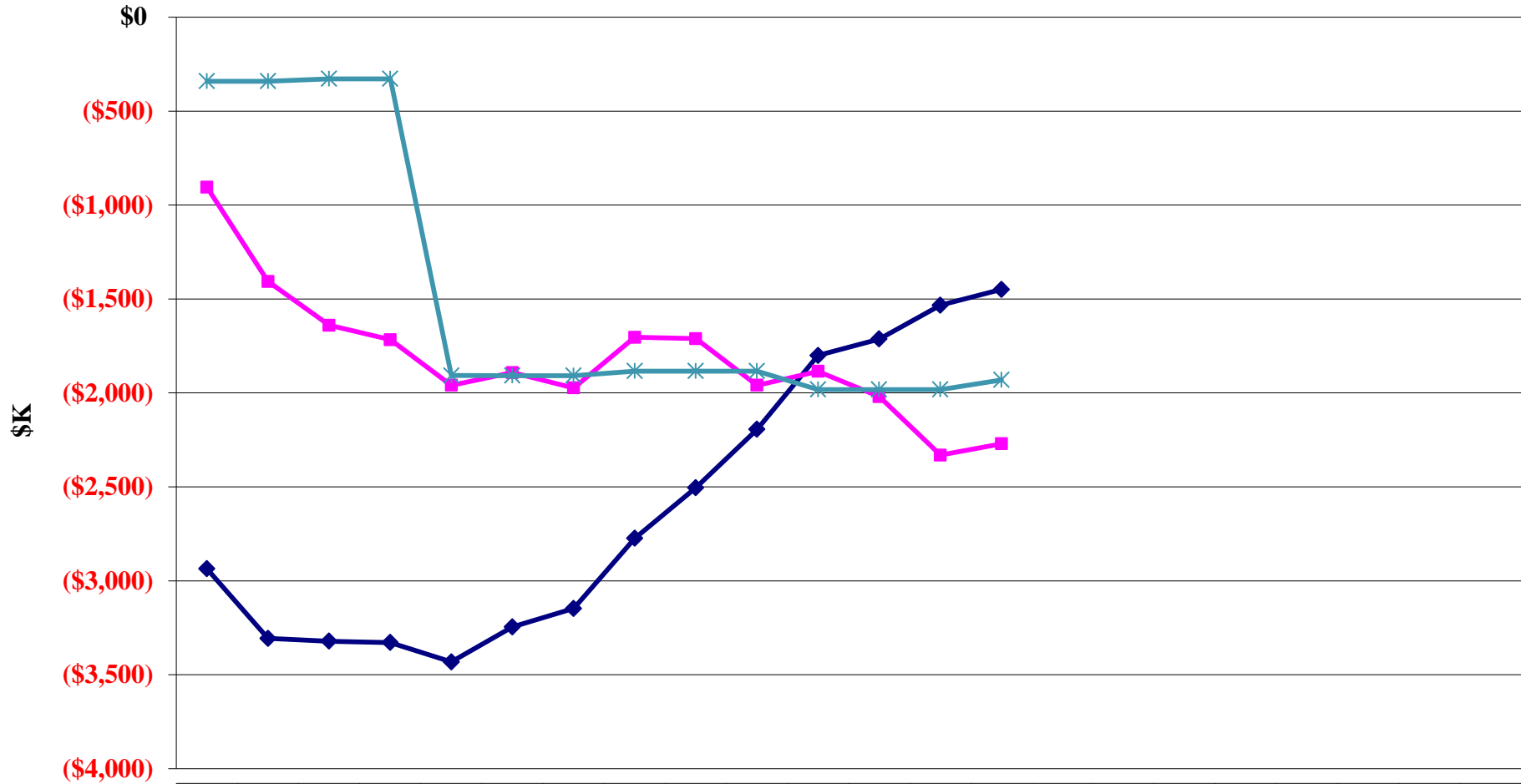
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(975)	(1,140)	(1,539)	(698)	(712)	(980)	(1,006)	(1,106)	(1,228)	(1,361)	(1,621)	(1,641)	(1,663)	(1,894)									
■ Cv	874	749	735	858	849	850	808	785	779	744	689	700	750	620									
✱ VAC	1,542	1,542	1,572	1,572	1,574	1,574	1,574	1,583	1,583	1,583	1,001	1,001	1,001	1,017									

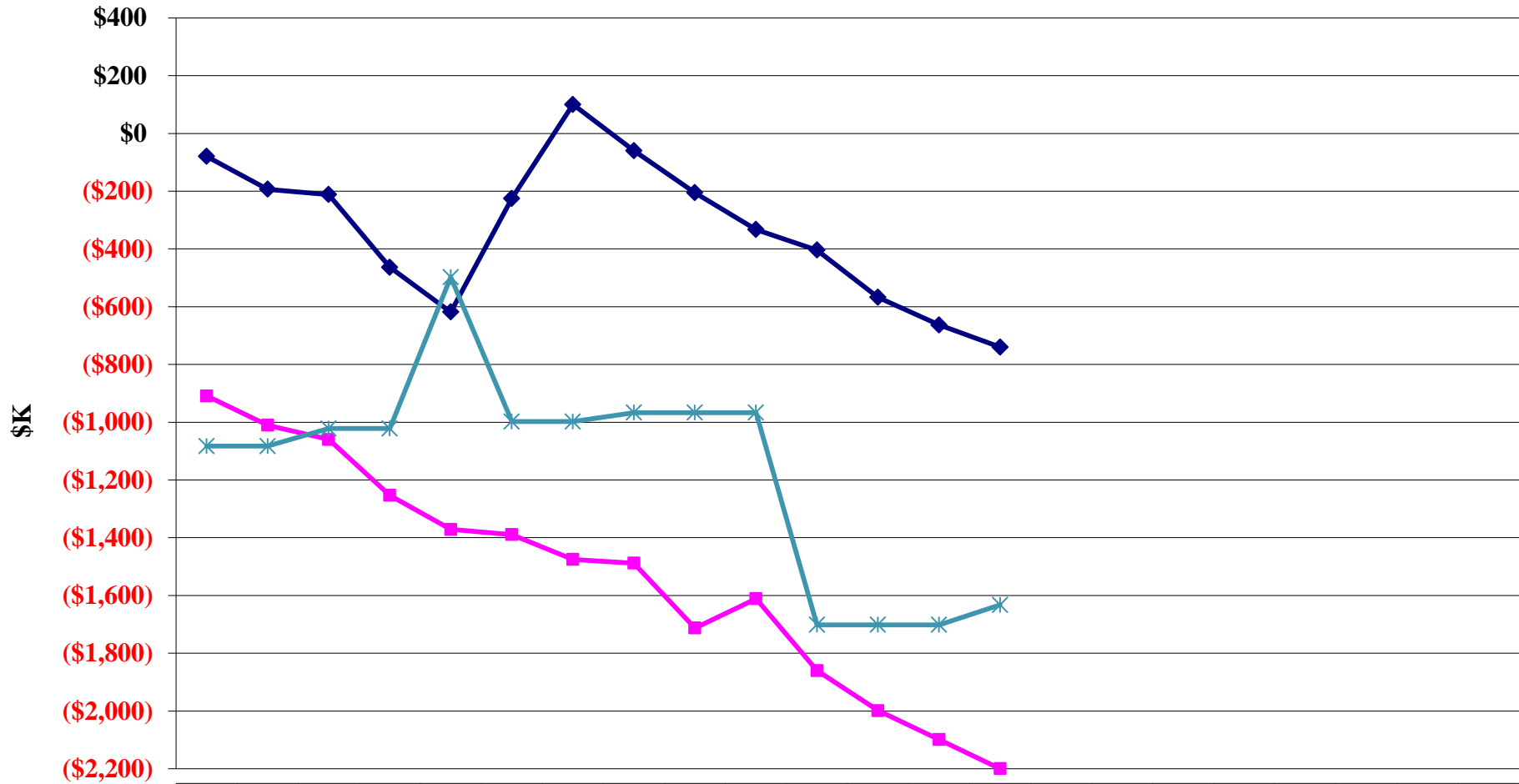
12 GeV 1.3.3 Construction Cryogenics

Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(2,936)	(3,307)	(3,321)	(3,329)	(3,432)	(3,245)	(3,148)	(2,774)	(2,505)	(2,194)	(1,801)	(1,713)	(1,534)	(1,450)									
■ Cv	(905)	(1,407)	(1,640)	(1,717)	(1,959)	(1,892)	(1,973)	(1,704)	(1,711)	(1,959)	(1,886)	(2,020)	(2,331)	(2,271)									
* VAC	(341)	(341)	(328)	(328)	(1,907)	(1,908)	(1,908)	(1,884)	(1,884)	(1,884)	(1,982)	(1,982)	(1,982)	(1,931)									

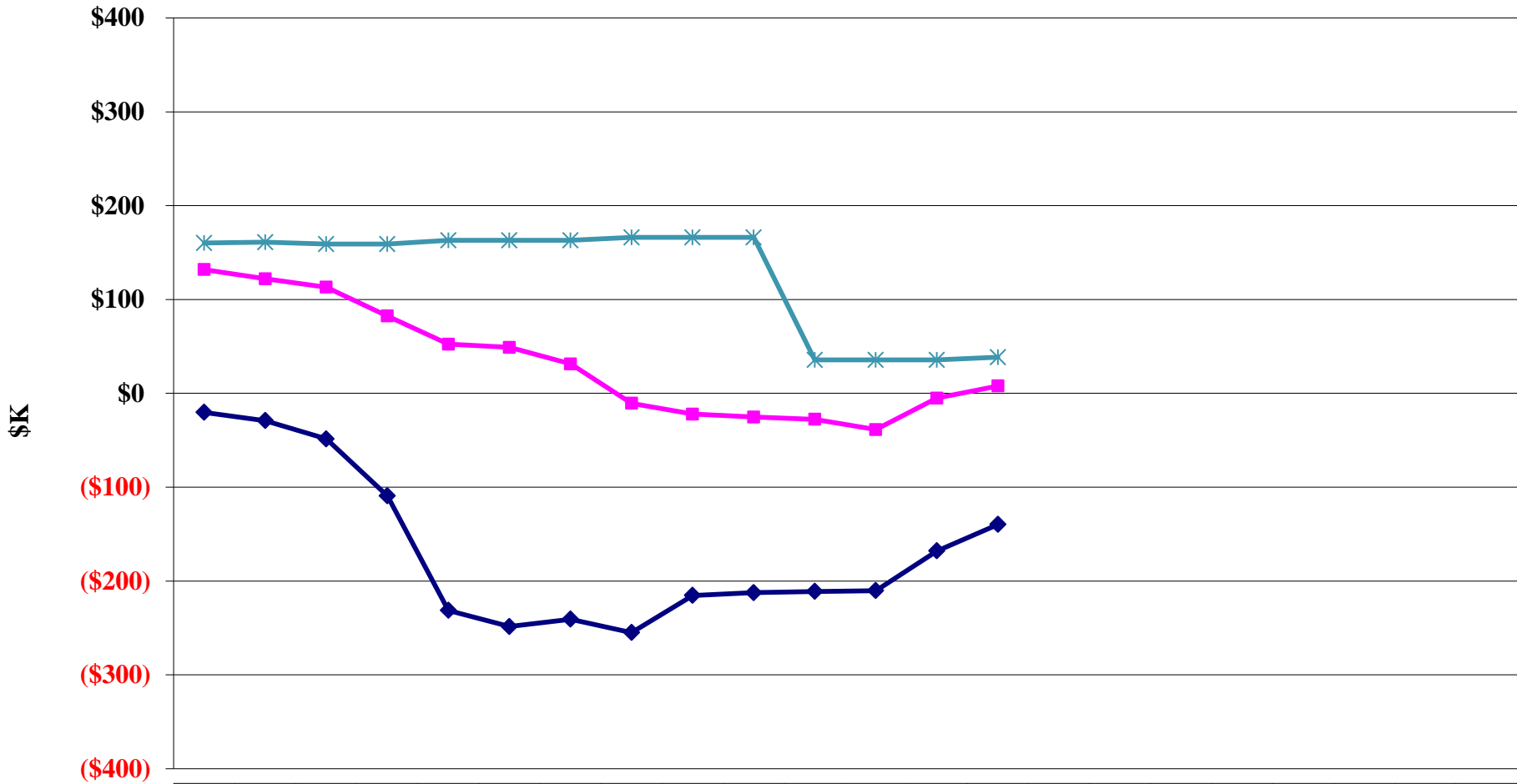
12 GeV 1.3.4 Construction Beam Transport Sv/Cv/VAC Analysis



◆ Sv	(80)	(193)	(212)	(464)	(618)	(225)	100	(60)	(205)	(333)	(404)	(568)	(663)	(740)										
■ Cv	(909)	(1,010)	(1,060)	(1,253)	(1,371)	(1,389)	(1,475)	(1,488)	(1,713)	(1,611)	(1,860)	(1,999)	(2,099)	(2,200)										
* VAC	(1,083)	(1,083)	(1,022)	(1,022)	(498)	(998)	(998)	(967)	(967)	(967)	(1,702)	(1,702)	(1,702)	(1,633)										

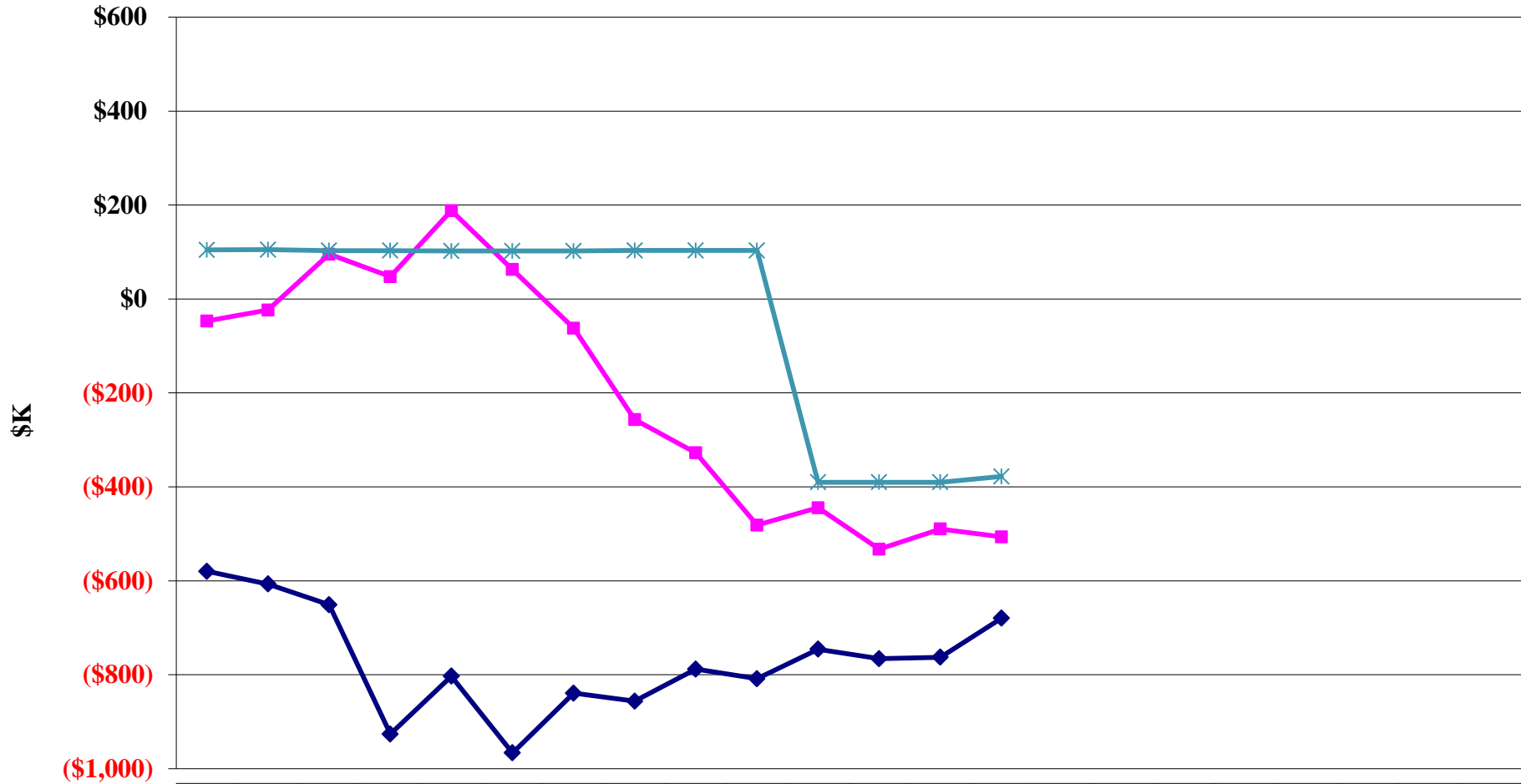
12 GeV 1.3.5 Construction Extraction

Sv/Cv/VAC Analysis



12 GeV 1.3.6 Construction IC&S

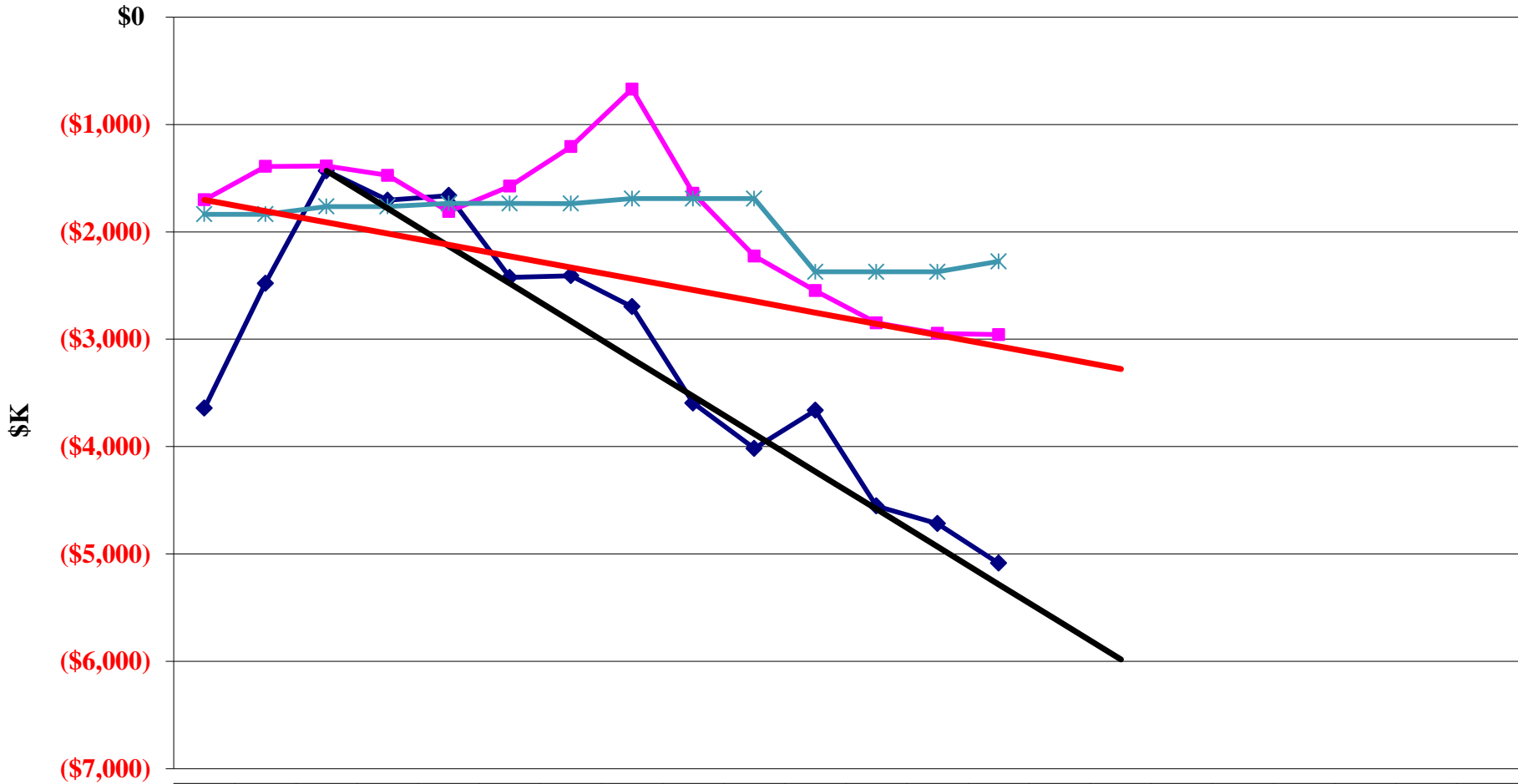
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
◆ Sv	(580)	(607)	(651)	(926)	(803)	(966)	(839)	(856)	(788)	(809)	(746)	(766)	(763)	(680)								
■ Cv	(47)	(23)	95	47	188	63	(62)	(257)	(328)	(481)	(445)	(533)	(490)	(506)								
* VAC	104	105	103	103	102	102	102	103	103	103	(390)	(390)	(390)	(378)								

12 GeV 1.4 Construction Halls A, B, & C

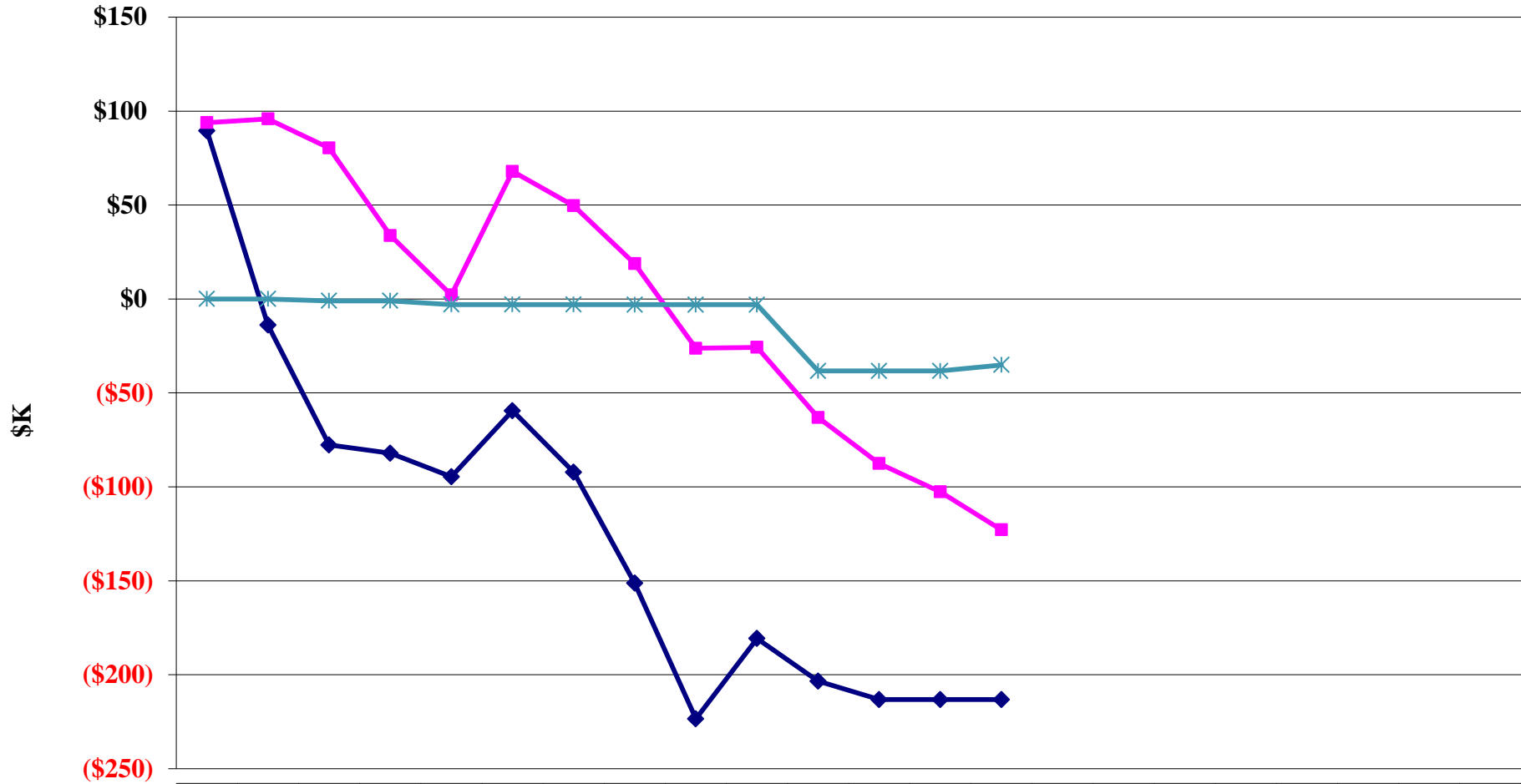
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	(3,643)	(2,480)	(1,432)	(1,705)	(1,662)	(2,424)	(2,408)	(2,697)	(3,595)	(4,017)	(3,662)	(4,553)	(4,718)	(5,086)									
■ Cv	(1,702)	(1,390)	(1,387)	(1,474)	(1,812)	(1,574)	(1,206)	(670)	(1,640)	(2,225)	(2,548)	(2,847)	(2,946)	(2,958)									
* VAC	(1,836)	(1,836)	(1,764)	(1,764)	(1,736)	(1,735)	(1,736)	(1,690)	(1,690)	(1,690)	(2,372)	(2,372)	(2,372)	(2,276)									
— Trendline Sv			(1,432)	(1,782)	(2,132)	(2,482)	(2,832)	(3,182)	(3,532)	(3,882)	(4,232)	(4,582)	(4,932)	(5,282)	(5,632)	(5,982)							
— Trendline Cv	(1,702)	(1,807)	(1,912)	(2,017)	(2,122)	(2,227)	(2,332)	(2,437)	(2,542)	(2,647)	(2,752)	(2,857)	(2,962)	(3,067)	(3,172)	(3,277)							

12 GeV 1.4.1 Construction Hall A

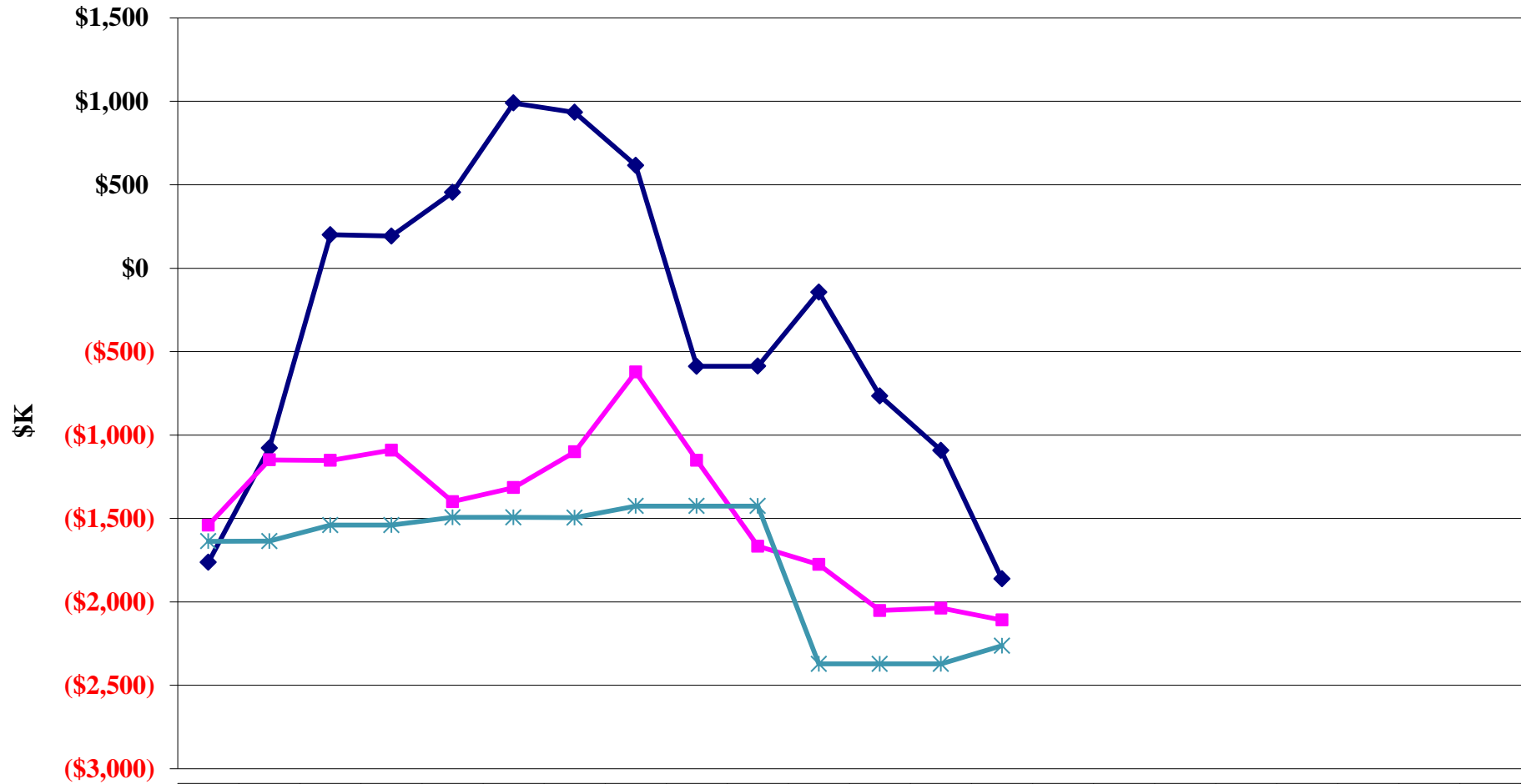
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv	89	(14)	(78)	(82)	(95)	(60)	(92)	(151)	(223)	(181)	(203)	(213)	(213)	(213)									
■ Cv	94	96	80	34	2	68	50	19	(26)	(26)	(63)	(88)	(103)	(123)									
* VAC	0	0	(1)	(1)	(3)	(3)	(3)	(3)	(3)	(3)	(38)	(38)	(38)	(35)									

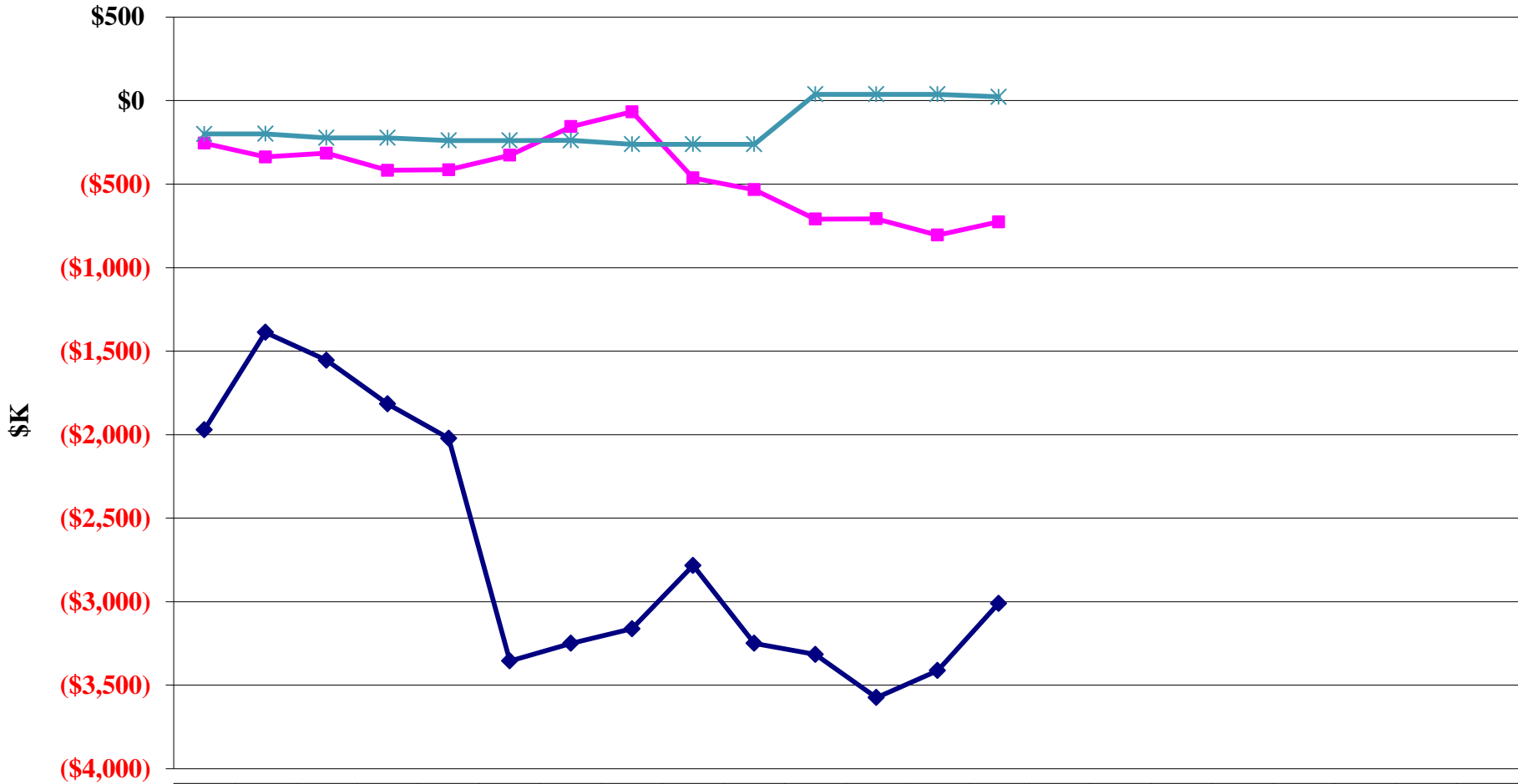
12 GeV 1.4.2 Construction Hall B

Sv/Cv/VAC Analysis



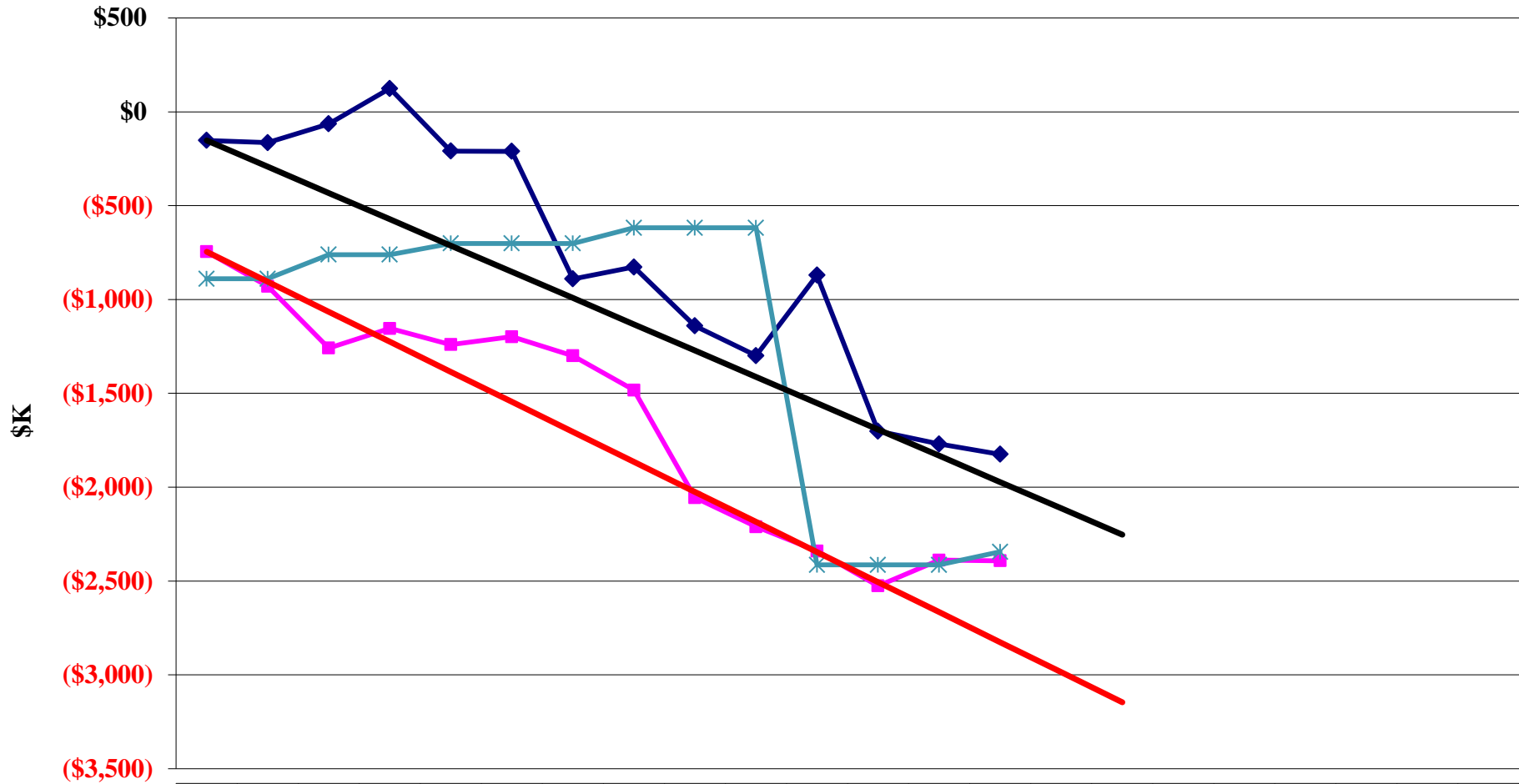
12 GeV 1.4.3 Construction Hall C

Sv/Cv/VAC Analysis



12 GeV 1.5 Construction Hall D

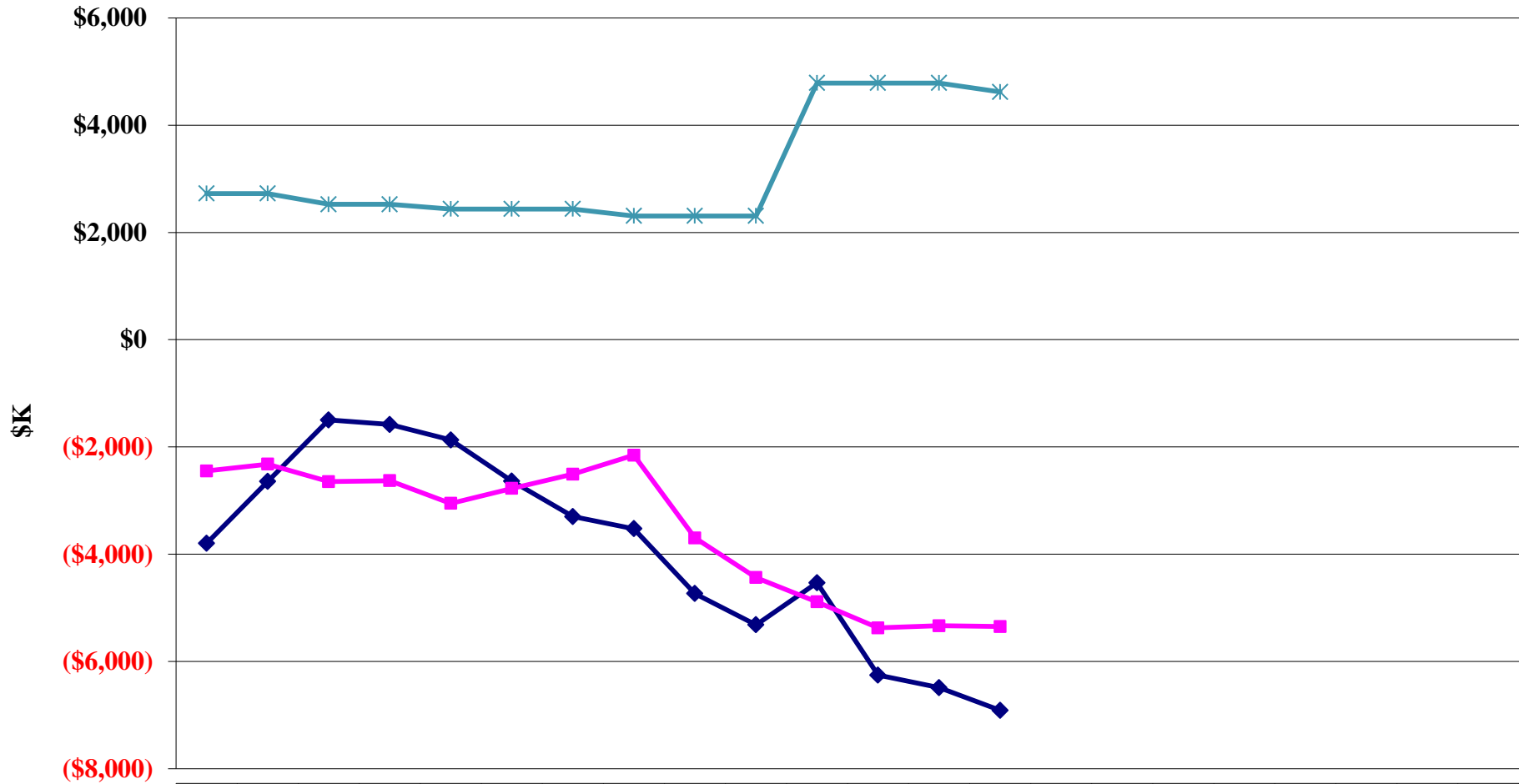
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
◆ Sv	(152)	(165)	(65)	124	(209)	(211)	(891)	(827)	(1,140)	(1,299)	(870)	(1,702)	(1,770)	(1,825)								
■ Cv	(745)	(930)	(1,259)	(1,154)	(1,240)	(1,198)	(1,300)	(1,483)	(2,056)	(2,211)	(2,340)	(2,526)	(2,388)	(2,392)								
* VAC	(890)	(890)	(761)	(761)	(701)	(701)	(701)	(618)	(618)	(618)	(2,414)	(2,414)	(2,414)	(2,344)								
— Trendline Sv	(152)	(292)	(432)	(572)	(712)	(852)	(992)	(1,132)	(1,272)	(1,412)	(1,552)	(1,692)	(1,832)	(1,972)	(2,112)	(2,252)						
— Trendline Cv	(745)	(905)	(1,065)	(1,225)	(1,385)	(1,545)	(1,705)	(1,865)	(2,025)	(2,185)	(2,345)	(2,505)	(2,665)	(2,825)	(2,985)	(3,145)						

12 GeV 1.4/1.5 Construction Halls

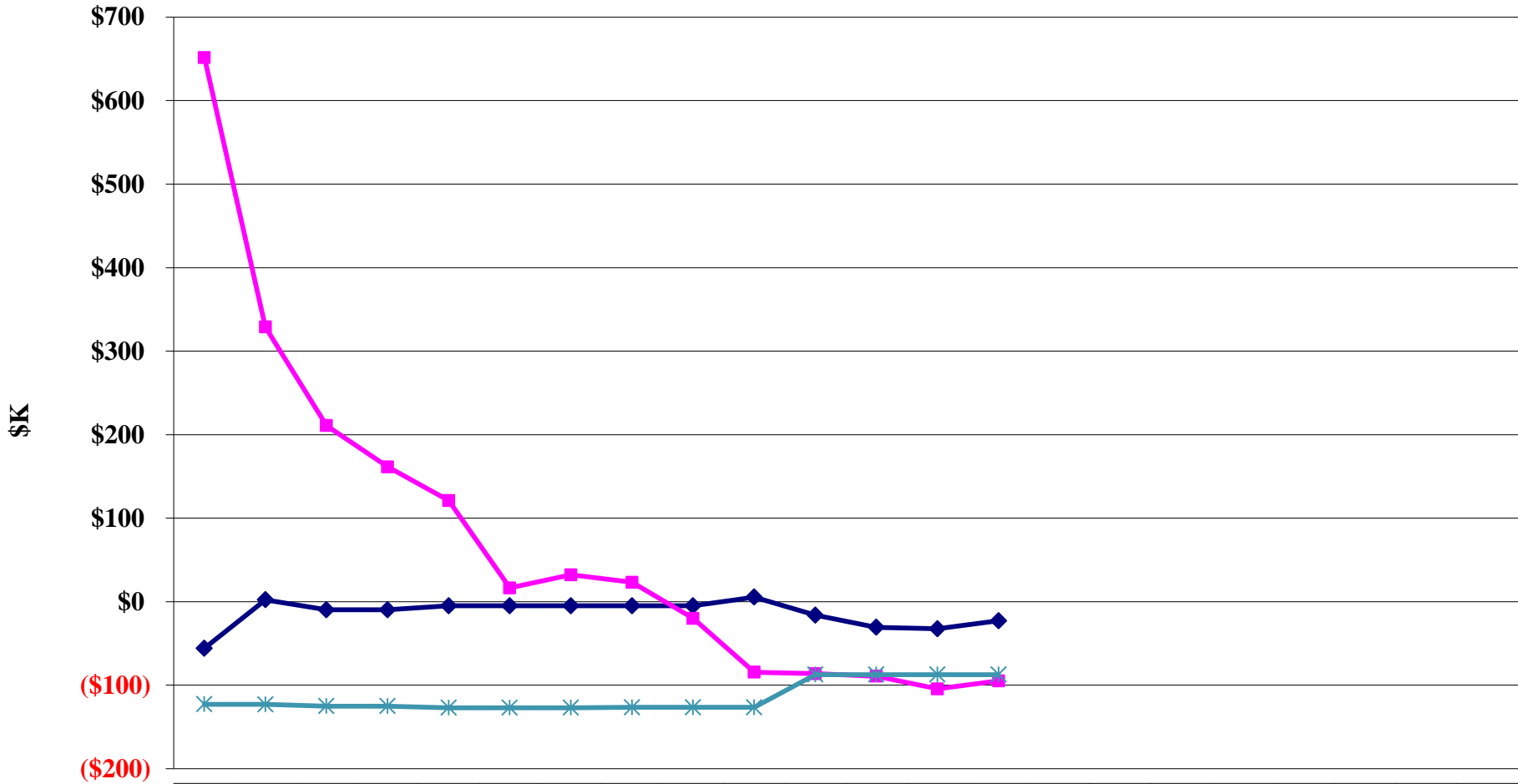
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
Sv	(3,795)	(2,644)	(1,497)	(1,581)	(1,871)	(2,635)	(3,298)	(3,524)	(4,735)	(5,317)	(4,533)	(6,255)	(6,488)	(6,911)									
Cv	(2,447)	(2,320)	(2,645)	(2,628)	(3,052)	(2,773)	(2,507)	(2,153)	(3,696)	(4,436)	(4,888)	(5,373)	(5,334)	(5,350)									
VAC	2,726	2,726	2,525	2,525	2,437	2,436	2,437	2,308	2,308	2,308	4,786	4,786	4,786	4,620									

12 GeV 1.6 Construction Civil

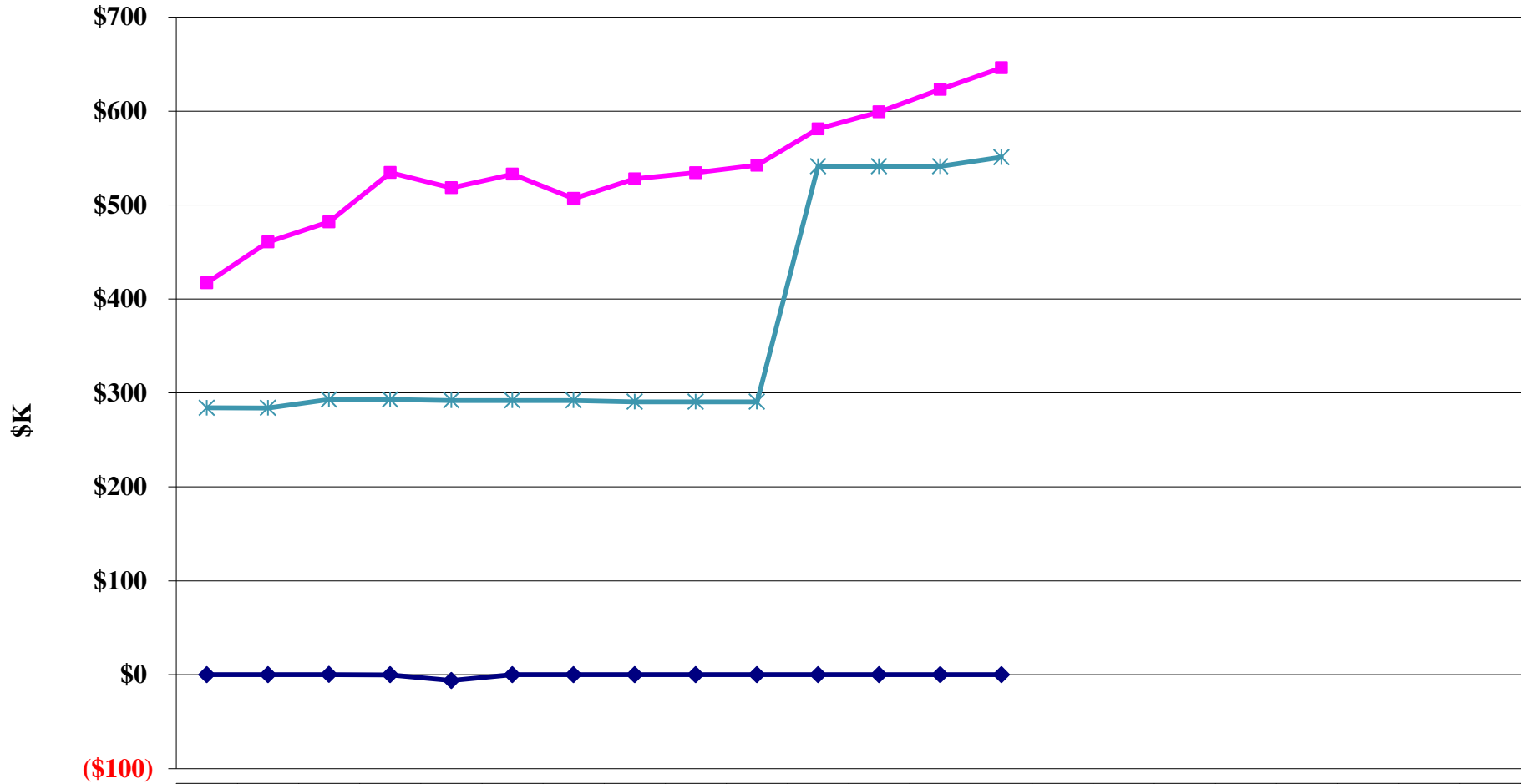
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
◆ Sv	(56)	2	(10)	(10)	(5)	(5)	(5)	(5)	(5)	5	(16)	(31)	(32)	(23)								
■ Cv	652	329	211	161	121	16	32	23	(20)	(84)	(86)	(89)	(104)	(95)								
* VAC	(123)	(123)	(125)	(125)	(127)	(127)	(127)	(126)	(126)	(126)	(87)	(87)	(87)	(87)								

12 GeV 1.7 Construction Project Management

Sv/Cv/VAC Analysis

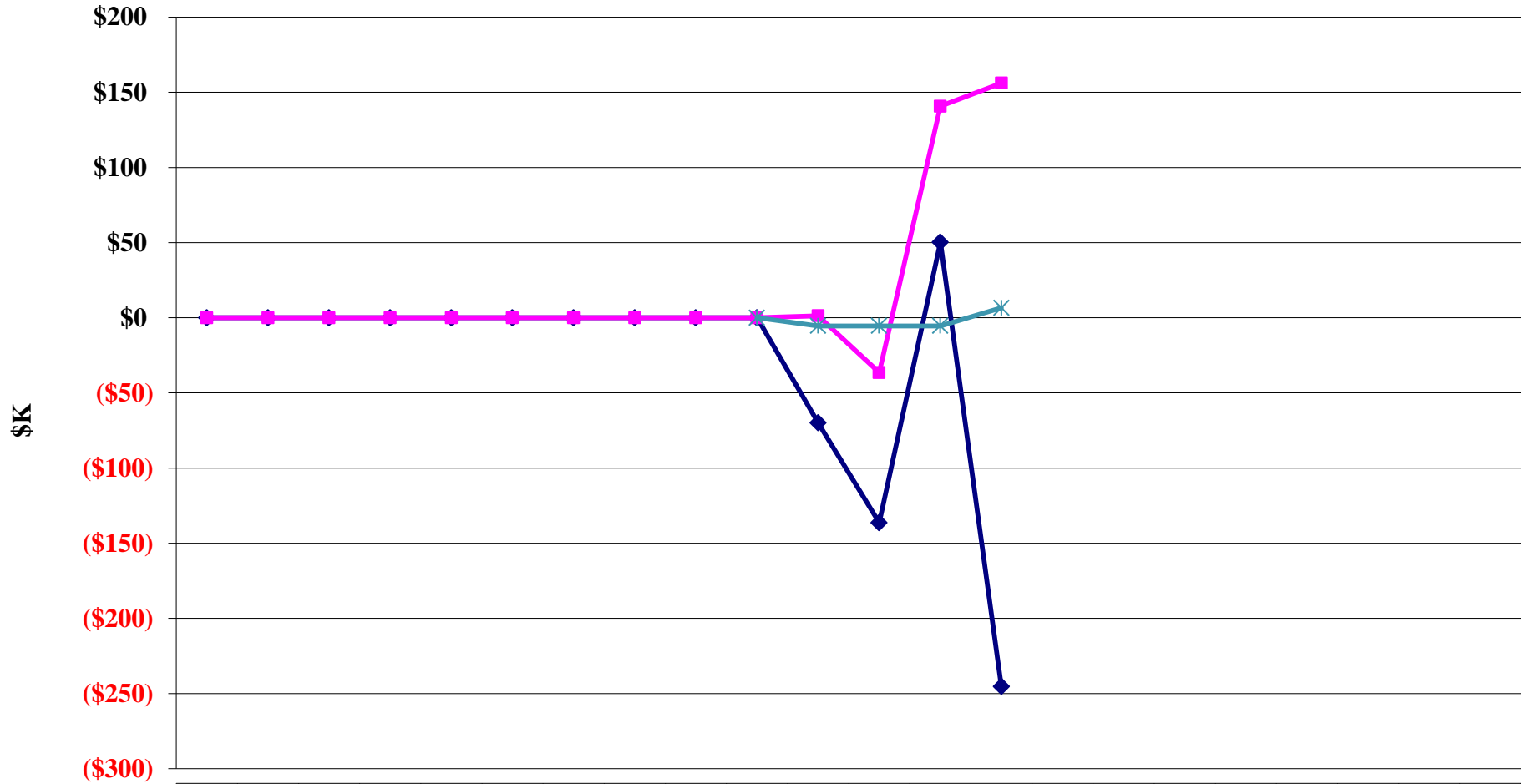


(\$100)

	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
◆ Sv	(0)	0	0	(0)	(6)	0	0	0	0	0	0	(0)	0	0								
■ Cv	417	461	482	534	518	533	507	528	534	542	581	599	623	646								
* VAC	284	284	293	293	292	292	292	291	291	291	541	541	541	551								

12 GeV 1.8 Pre-Ops

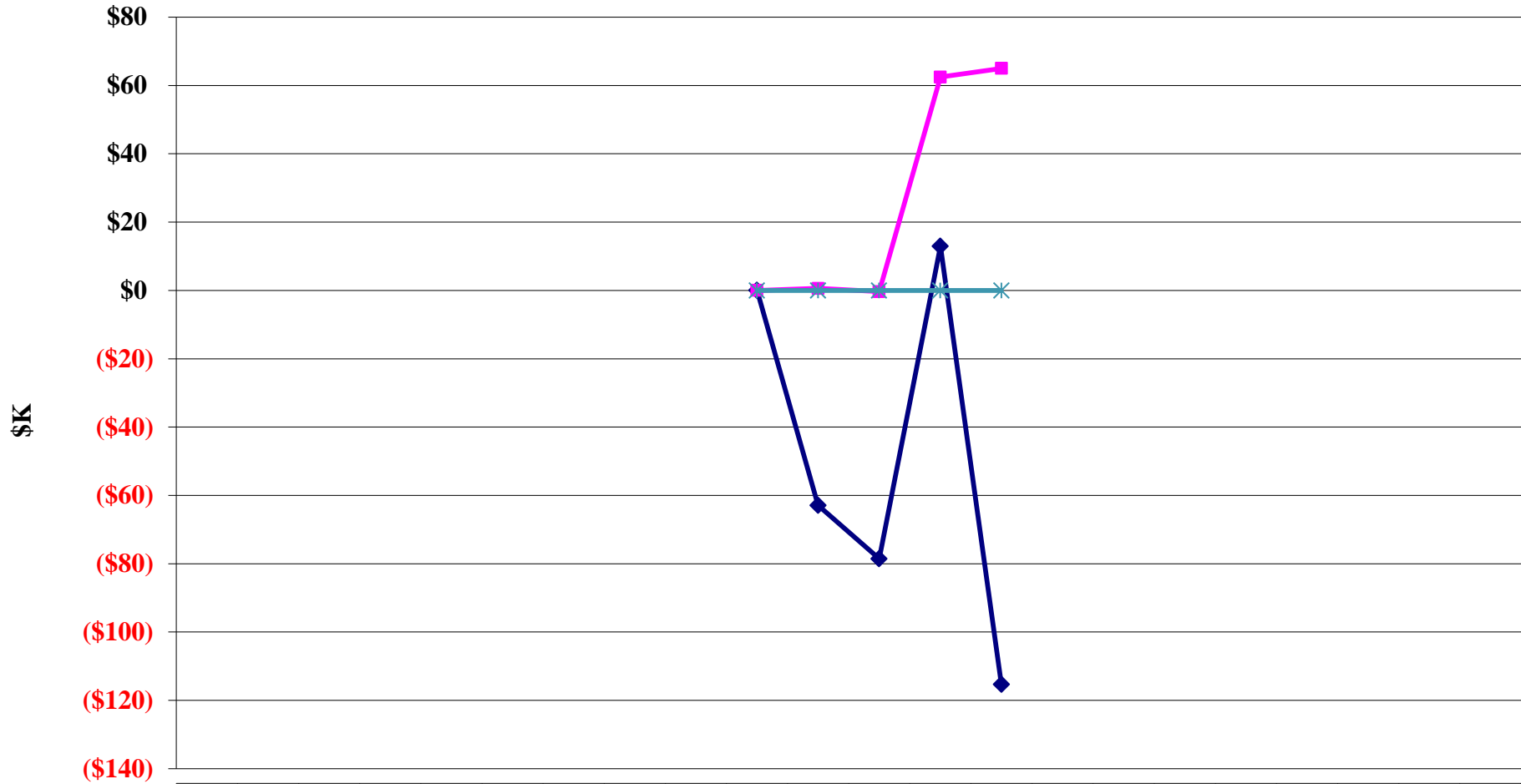
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
Sv	0	0	0	0	0	0	0	0	0	0	(70)	(136)	50	(245)									
Cv	0	0	0	0	0	0	0	0	0	0	1	(36)	141	156									
VAC										0	(5)	(5)	(5)	7									

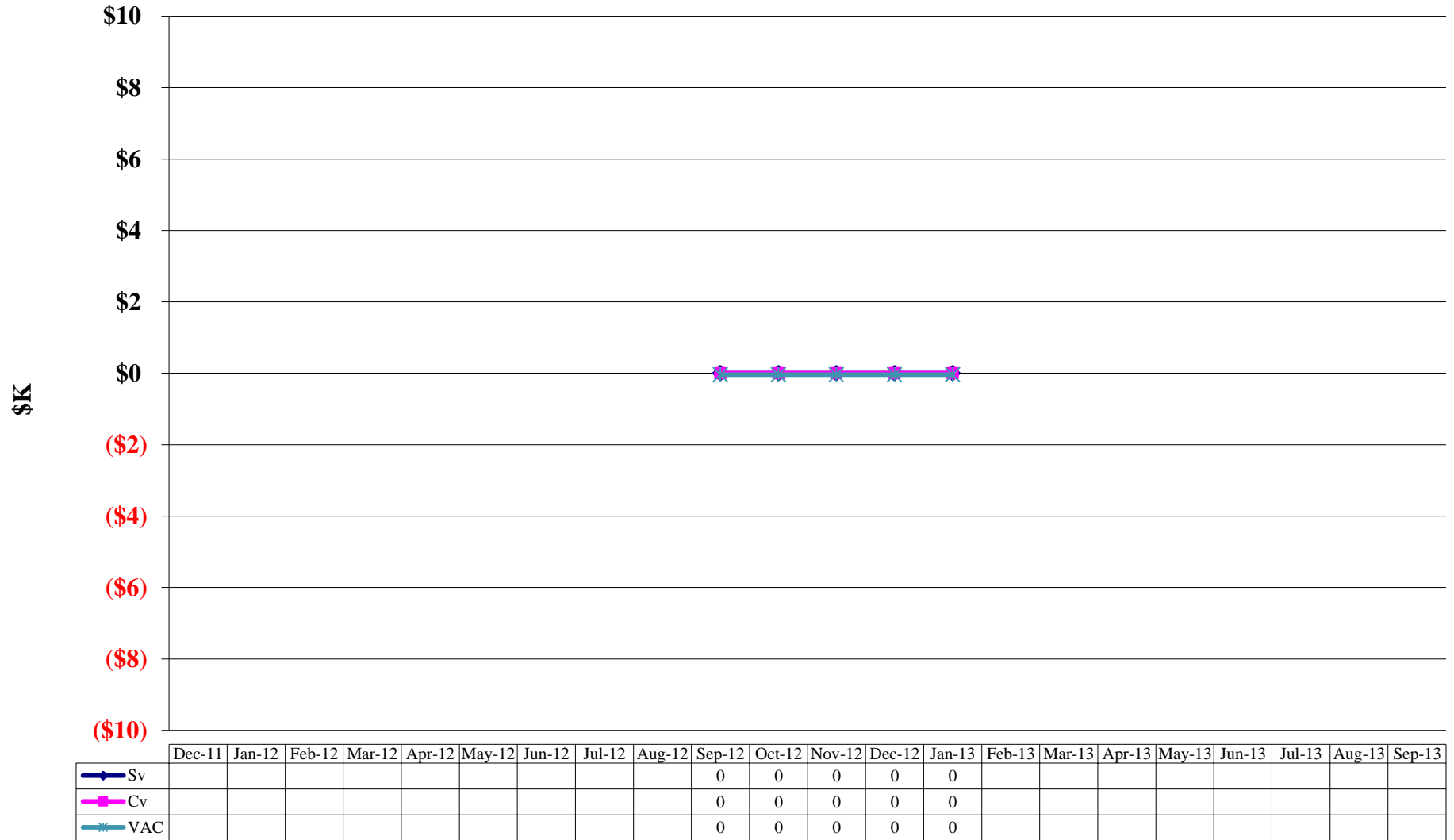
12 GeV 1.8.1 Accelerator Pre-Ops

Sv/Cv/VAC Analysis



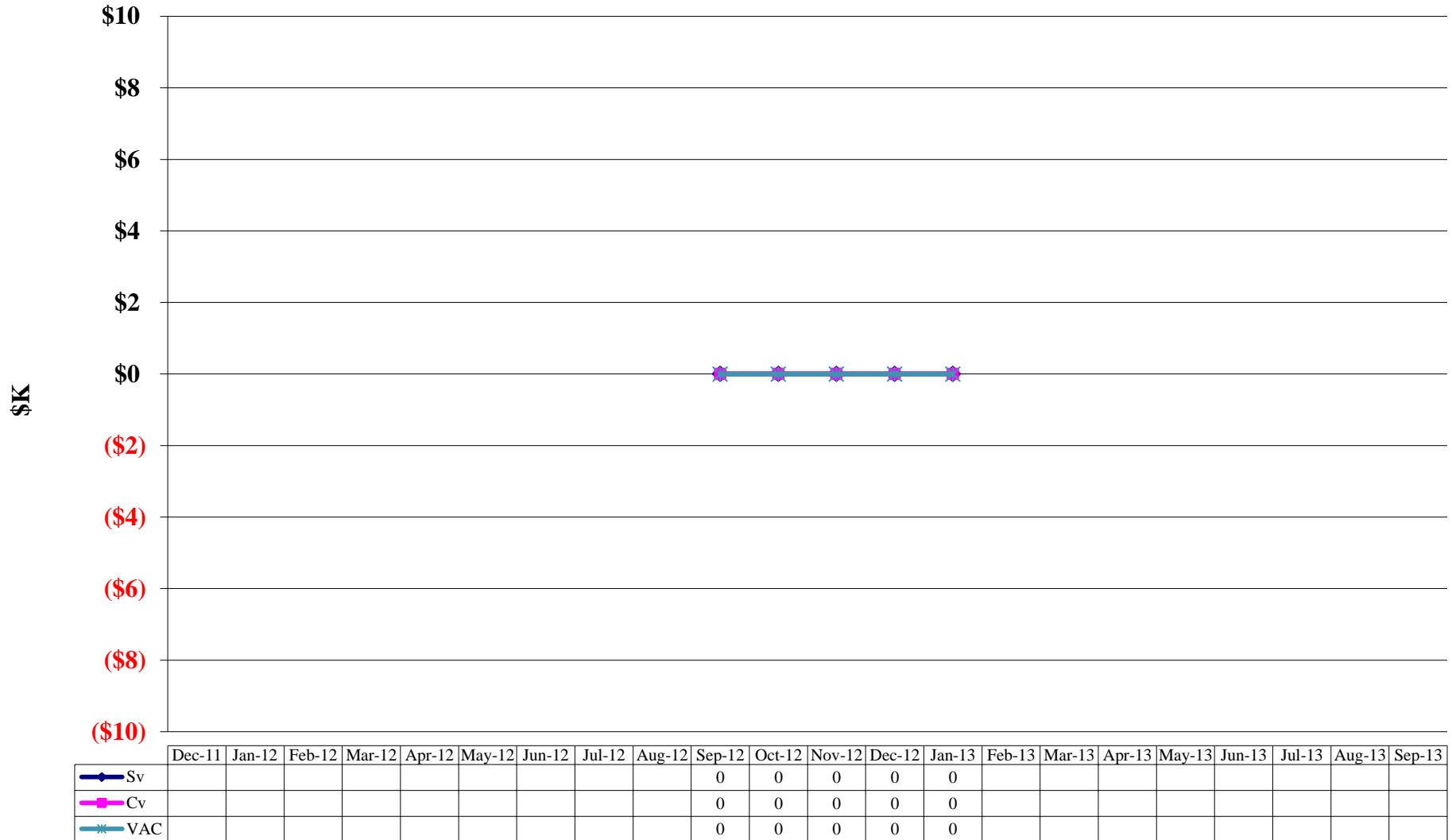
	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv										0	(63)	(79)	13	(115)									
■ Cv										0	1	(0)	62	65									
* VAC										0	0	0	0	0									

12 GeV 1.8.1.1 Accelerator Pre-Ops Beam Commissioning Sv/Cv/VAC Analysis



12 GeV 1.8.1.2 Accelerator Pre-Ops Utilities

Sv/Cv/VAC Analysis



12 GeV 1.8.1.3 Accelerator Pre-Ops Checkout

Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv										0	(63)	(79)	13	(115)									
■ Cv										0	1	(0)	62	65									
* VAC										0	0	0	0	0									

12 GeV 1.8.1.3.1 Cryomodule Pre-Ops

Sv/Cv/VAC Analysis



12 GeV 1.8.1.3.2 Power Pre-Ops Checkkout

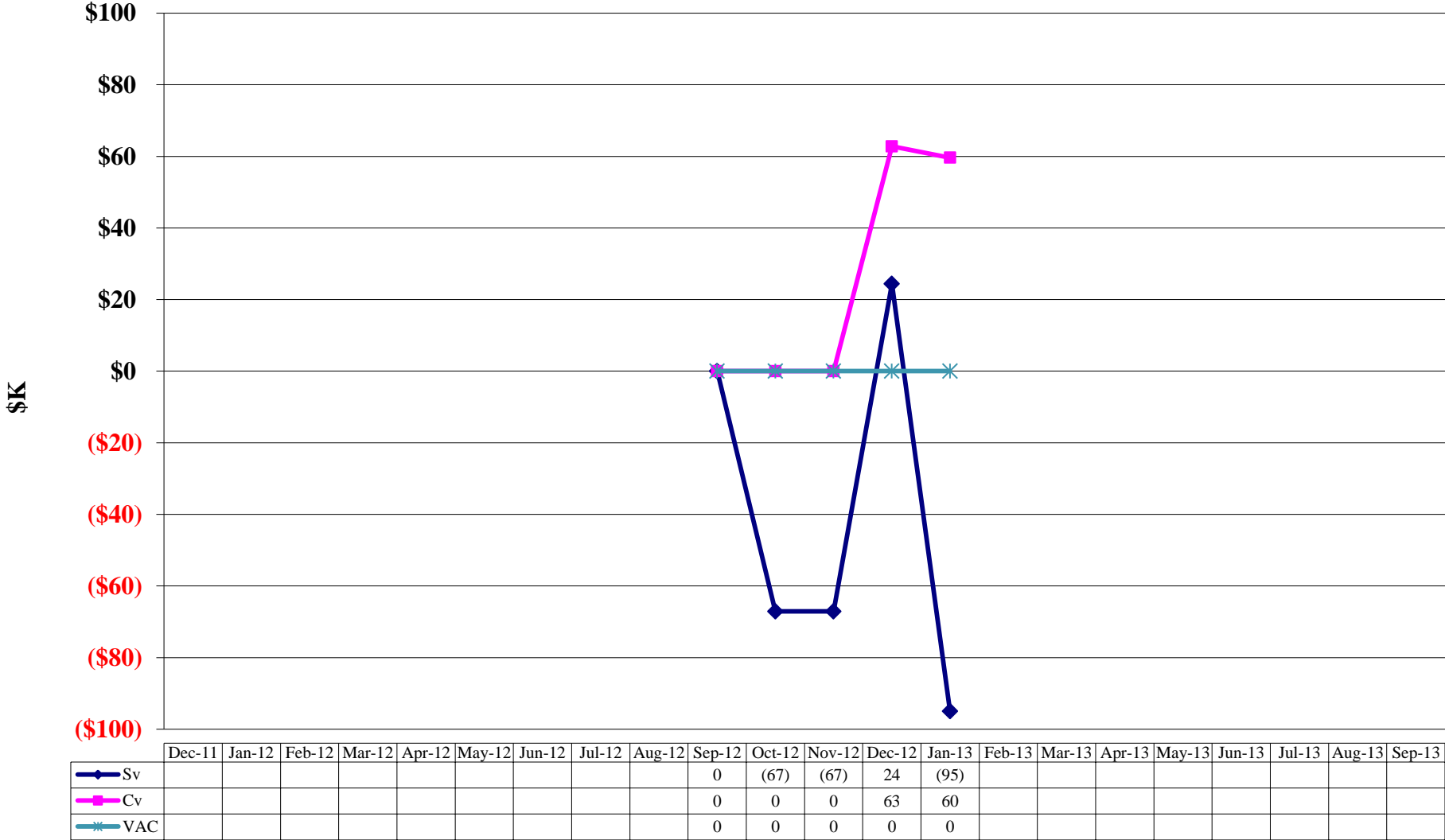
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
Sv										0	4	(11)	(11)	(13)									
Cv										0	1	(0)	(0)	5									
VAC										0	0	0	0	0									

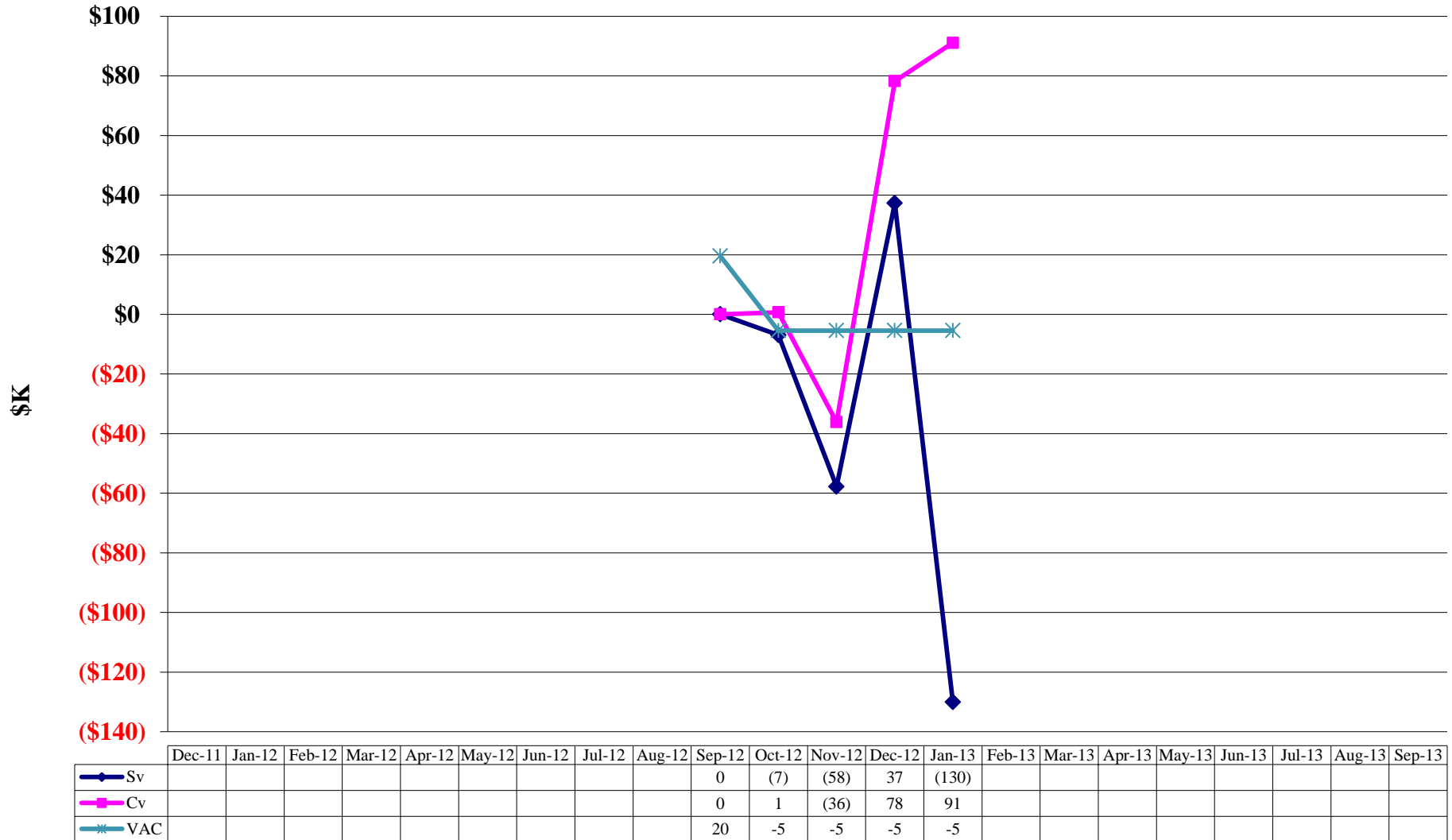
12 GeV 1.8.1.3.3 Cryogenics Pre-Ops Checkout

Sv/Cv/VAC Analysis



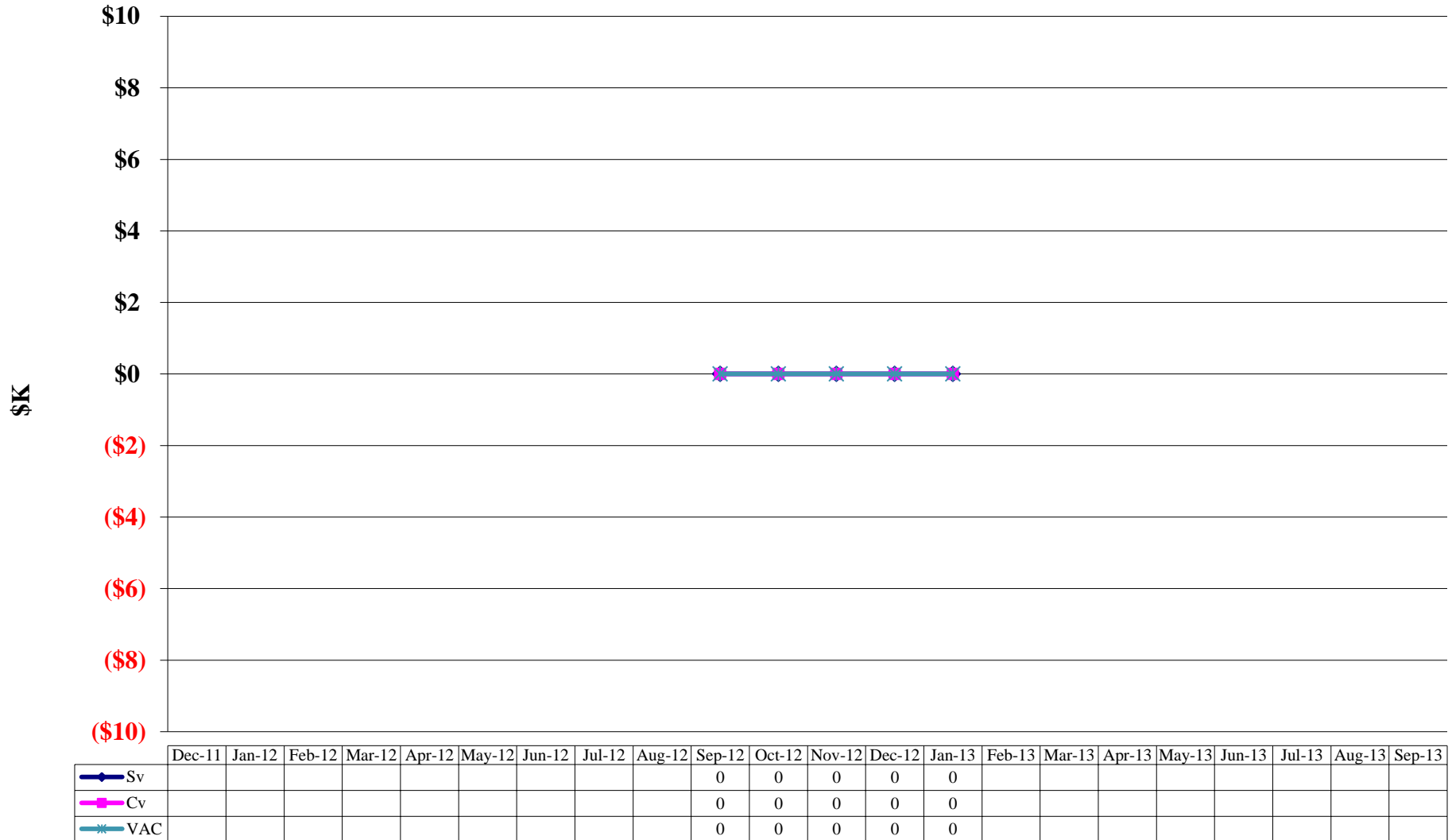
12 GeV 1.8.2 Halls Pre-Ops

Sv/Cv/VAC Analysis



12 GeV 1.8.2.1 Hall A Checkout & Beam Commissioning

Sv/Cv/VAC Analysis



12 GeV 1.8.2.2 Hall B Checkout & Beam Commissioning

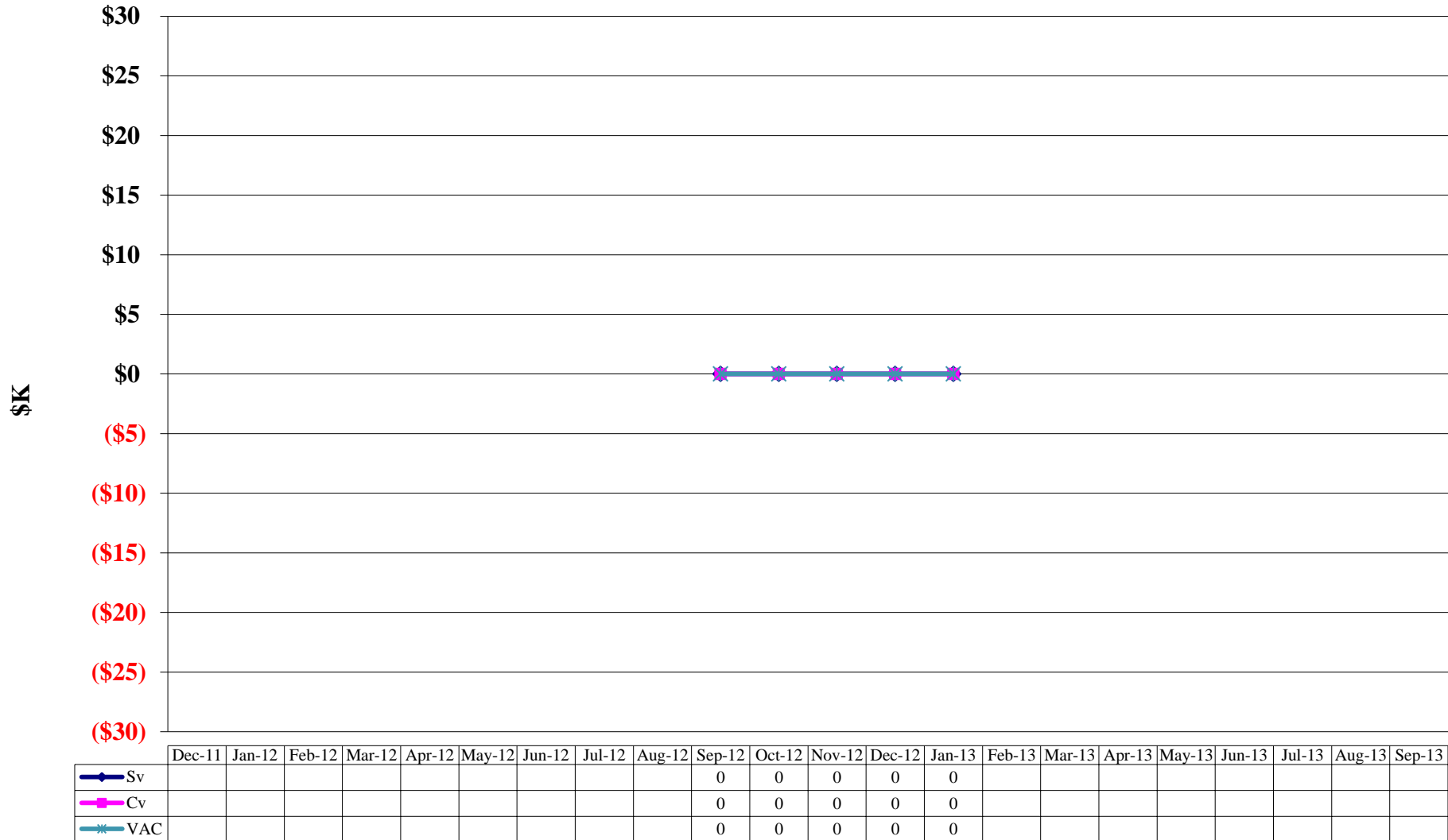
Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
◆ Sv										0	(9)	(17)	48	33									
■ Cv										0	0	0	71	71									
* VAC										0	0	0	0	0									

12 GeV 1.8.2.3 Hall C Beam Commissioning

Sv/Cv/VAC Analysis



12 GeV 1.8.2.4 Hall D Beam Comissioning

Sv/Cv/VAC Analysis



	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	
Sv										0	2	(41)	(11)	(163)									
Cv										0	1	(36)	7	20									
VAC										-5	-5	-5	-5	-5									

12 GeV 1.8.3 Pre-Ops Support

Sv/Cv/VAC Analysis

